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A FEW NEW IPIDÆ.

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Ips borealis, n. sp.—Length, $3\frac{1}{4}$ – $3\frac{1}{2}$ mm.; width, $1\frac{1}{3}$ mm. Sides parallel, smaller and more slender than *pini*. Head and prothorax black, elytra dark brown to black, legs and antennæ lighter. Prothorax three-fourths as long as the elytra.

Head rather prominent, globular, beak rather distinct with the angles square. Vertex and front convex; whole upper part of head remarkably smooth and shining. Front with a faint transverse impression extending between the eyes. In one sex the front is nearly as smooth as the vertex, very finely punctured with extremely minute hairs; in the other sex the front is densely, minutely granulate-punctate, and hairy below. These hairs from the front are brownish, slender, and erect. In both sexes the epistomal margin is densely fringed with yellowish or orange hairs; and close to the margin, and parallel to it, is a row of close-set, short tubercles. The eyes are elongate, broadly rounded above, and faintly emarginate in front. The genæ are sparsely punctured, aciculate, with large punctures below. The club is large, short-oval, with the first two sutures distinctly bisinuate.

The pronotum is longer than wide, hardly wider than the elytra; the sides are nearly parallel forward for three-fourths the length, then rapidly narrowed; the caudal margin is obtusely angled at the middle, with the hind angles rounded. The anterior half is rather coarsely tuberculate, as usual; the posterior half is shining, coarsely and sparsely punctured with the punctures slightly tuberculate on the sides, and a wide, smooth, shining, median space.

The elytral striæ are but faintly impressed, except the sutural striæ which are wide and deep; the stria punctures are medium in size, not close, and not regularly spaced; those of the sutural striæ are larger and closer. The intervals are wide and flat, and uniseriately punctured throughout their length. The punctures of the first two interspaces are closer and strongly granulate; those of the remaining interspaces are sparse on the disc, closer and granulate near the margin of the declivity;

closer on the sides and granulate behind. The first declivital tooth, that of the second interspace, is distinct and acute; the second and third are closely united; the second acute, the third longer, blunt, and incurved; the fourth is smaller, acute, and midway between the third and the raised apical margin. This raised apical margin is less elongate than in *pini*. The tip of each elytron is raised into a minute recurved tubercle. The declivity is not deeply concave, coarsely, irregularly punctured, glabrous, with the sutures strongly raised. The body is clothed above and on the sides with long, coarse, erect, brownish hairs. The disc of the pronotum and the central region of each elytron are less hairy. The long hairs of the elytra arise, as usual, from the interstitial punctures.

The only sexual characters observed are those of the front. This species is closely allied to *pini*; but quite distinct in the frontal characters and the long hairs of the discal interspaces of the elytra.

Ten specimens from spruce at St. Anthony, Newfoundland; collected by Mr. C. M. Spencer of Macdonald College. Type specimen with the front smooth and very finely punctured.

Ips longidens, n. sp.—Length, $2\frac{3}{4}$ – $3\frac{1}{4}$ mm.; slender cylindrical, dark red to black, moderately clothed with long light hairs; allied to *latidens* but differs as below.

The head is coarsely, rugosely punctured; and has the front granulate, flattened, or faintly impressed transversely, with a narrow faint median carina extending to the vertex; the epistoma deeply emarginate on the middle line, with the epistomal fringe thicker and bright yellow from the emargination; the eyes broadly emarginate; the antennal club with the sutures bisinuate, nearly straight.

The pronotum is longer than wide, distinctly impressed on each side near the middle, broadly rounded behind, slightly rounded and gradually narrowed on the sides, more rapidly cephalad of the middle, and narrowly rounded in front. The asperations of the front half of the pronotum are of different sizes, the largest more or less concentrically arranged; the hinder half is shining, with a smooth median space and small, sparse punctures on the disc, becoming larger on the sides. The pronotum is sparsely hairy except the centre of the disc which is nearly glabrous.

The elytra have the sides parallel as far as the level of the upper margin of the declivity, then obliquely narrowed and squarely truncate, as viewed from above. The striæ are distinctly impressed on the disc, less deeply on the sides, with the stria punctures large, quadrate, and

closely placed. The sutural striæ are rather narrower than usual, but deeply impressed. The interspaces are narrow, on the disc narrower than the striæ; and uniseriately punctured. These interstitial punctures are small at the base but become distinctly larger behind and are at times slightly confused near the declivital margin, where they are nearly as large as those of the striæ. Near the lateral margin the interstitial punctures are also larger towards the base. Near the declivital margin the interspaces are strongly roughened by the large, close, strial and interstitial punctures. The punctures of the first two interspaces are granulate, more strongly near the declivity. The long hairs are, as usual, from the interstitial punctures. The declivity is nearly perpendicular; flattened; coarsely, not densely, punctured; faintly pubescent; with the sutural interspaces raised and very faintly convex in profile. The declivital armature is peculiar, and approaches that of *latidens*. The first tooth, that of the second interspace, is small, acute, and curved ventro-mesad. The second tooth is longer, sharp and nearly straight; it arises from the anterior or dorsal margin of an acute ridge which extends downward to end abruptly (usually) just before the third tooth. This ridge is sometimes nearly entire, or it may crenate, emarginate, or bimarginate. When emarginate there is the appearance of an additional, small, blunt tooth. The third tooth is like the second, long, slender, straight and acute, and is usually separated from the ridge mentioned above by a short interval; it is succeeded, after a short interval, by the raised, acute, usually crenate apical margin. In some specimens (δ ?) the second and third teeth are longer and blunt at the tip.

Twenty specimens from Hemlock, at Ithaca, N. Y.

This species differs from the *latidens* Lec., of California, its closest ally, in the longer pronotum, and distinct declivital armature. In *latidens* the second prominent tooth arises from the middle of the ridge. The published descriptions of *latidens* Lec. are given below. Original description by Dr. LeConte, Trans. Am. Ent. Soc., 1874, V 72: "*T. latidens*—Cylindrical, brown, shining, clothed with long erect yellow hairs, prothorax more parallel on the sides than usual; not much longer than wide; more broadly rounded in front; hind angles rounded; disc sculptured as in *T. pini*, more strongly impressed each side near the middle; elytral striæ deep, closely punctured interspaces each with a row of punctures; posterior declivity concave as usual; subsutural denticle small, acute, next tooth broad, composed of the confluence of three cusps, of which the

upper one is least developed and the middle one most prominent ; following this is a long acute tooth and then the usual apical acute margin. Length, .12 inch, 3 mm. California, Mr. Crotch. Smaller than *T. pini*, with a shorter prothorax and very different elytral sculpture and armature."

Description by LeCoate in Rhynchophora, page 367 : "This species is smaller (3 mm., .14 inch) than *T. pini*, and of more slender form. It is easily distinguished from all the other species by the much more deeply concave declivity of the elytra ; the cusp of the second interspace is acute ; the teeth of the fourth and fifth are united together, forming a ridge, which has three distinct cusps, of which the middle one is more prominent ; the tooth between this ridge and the terminal margin is unusually prominent. The striæ are composed of deep close-set punctures, and the interspaces are marked with rows of small punctures. The sutures of the antennal club are nearly straight."

Trypodendron betulae, n. sp.—Length, 3-3½ mm.; closely allied to *lineatus* Oliv., with which it has commonly been confused in collections. Colour black, legs and antennæ reddish, each elytron with a broad dusky-yellow vitta down the middle.

The head is subglobular in the female ; retracted ; front convex, punctured, coarsely granulate and hairy ; epistoma carinate on the middle line and raised along the front margin ; eyes divided, interocular space hairy ; antennæ from a small fossa between the ventral portion of the eye and the base of the mandible.

Pronotum wider than long, 6 : 5, faintly margined and truncate behind ; sides nearly parallel behind and evenly rounded to the middle line in front, which is very slightly produced ; strongly roughened in front with transverse rugosities, which become small behind the middle, but are continued on the dorsum nearly to the base ; the sides behind are nearly smooth, finely punctured, with a smooth unpunctured spot on each side ; sparsely clothed in front with slender backward-pointing hairs. Prosteronum narrow ; intercoxal process short, broadly triangular ; fore coxæ subglobose, sparsely hairy.

Elytra longer than the combined width at the base, 10 : 6, sides parallel as far as the level of the top of the declivity, then rapidly narrowed to the tip ; striæ faint on the disc, impressed on the declivity and distinctly impressed near the lateral margins ; strial punctures very small and shallow ; interstrial punctures of the disc extremely minute, those of the sides larger and with longer hairs ; they are confused towards the declivity and at the base ; declivity oblique, not flattened, but with the

first and second striæ conjointly impressed, much as in *lineatus*; first and third interspaces of the declivity convex, forming the lateral margins of the impression; the striæ tend to be impressed on the declivity and the interspaces to be convex, as in *lineatus*; interspaces of the declivity with distinct, confused, setigerous punctures, making the declivity distinctly though sparsely hairy; the interstitial punctures often minutely granulate.

Femora stout, distal lobes well developed; fore tibia gradually widened; regularly curved on the hind margin from near the base to the tip, and marked with a submarginal row of teeth distally, with small tubercles towards the base, and with sparse long hairs; front margin nearly straight, mucronate at the tip, with stout distal-pointing hairs apically; outer face hairy, and with many sparse conical tubercles shorter than the submarginal teeth. Inner face concave towards the tip and sparsely hairy; front margin bent inwards and tuberculate near the tip (this shows only from the inner side). First three segments of the tarsus stout, with few long hairs above, and pilose below; the fourth segment minute.

The hind tibia is more slender, hind margin slightly curved until near the tip which is broadly rounded at the outer angle, with submarginal teeth as in fore-tibia; front margin nearly straight; apical mucro more slender; without tubercles on the outer face; inner face with a row of spine-like hairs extending from the mucro diagonally to near the hind margin. This row of stout hairs, with the distal part of the hind margin forms a groove for the reception of the tarsus. First three segments of the tarsus stouter.

The antenna is reddish-yellow; scape slender and strongly curved at the base, swollen at the apex, with the dorsal margin rather distinctly bent at the distal fourth, but not strongly angulate as in *lineatus*; sparsely hairy, with longer hairs from the dorsal surface. The funicle four, segmented, first segment large, swollen distally; second segment pedunculate, widened distally, third and fourth segments wider and shorter, saucer-shaped; club longer than the funicle, oval, a little more strongly narrowed proximad, densely pubescent on both sides, with an acutely triangular, raised, more strongly chitinized portion at the base which is sparsely pubescent. The antenna of *lineatus* (from pine) differs in that the dorsal margin of the scape is sharply angled at the distal fourth; the second segment of the funicle is longer than in *betula*, with the sides nearly straight, except at the extreme base, and gradually widened; the club is more elongate than in *betula*, with the sides slightly rounded and

gradually widened from the nearly truncate, narrow base to near the apex, which is broadly rounded.

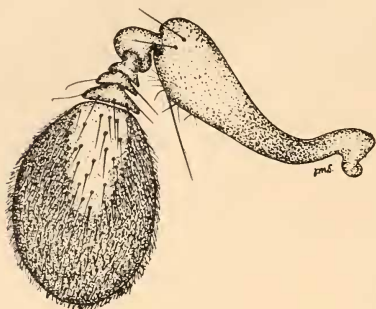


FIG. 12.—*Trypodendron betulae*, n. sp., antenna.

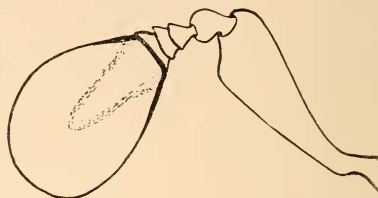


FIG. 13.—*T. lineatus* Oliv., antenna.

The male.—In the male the front is deeply and broadly concave, as in *lineatus*, with a median carina and the side margin of the depression fringed with long, erect, yellow hairs. The depression is very sparsely and minutely granulate-punctate, with inconspicuous setæ. The pronotum, from above, is wider than long, truncate before and behind, with the sides and angles slightly rounded. The asperations are but feebly developed. The hairs of the anterior half are long and curved backwards, and become shorter on the sides towards the base.

The sculpture of the elytra is often coarser in the males, with the striæ more distinct, and the declivital granules larger.

The tibia of the fore leg differs from that of the female in being more slender until near the tip, where it is suddenly widened. The fringe of the front margin is longer and very thick distally, without the distal tubercles. The hind tibiæ are rather more slender; hind margin toothed as before; outer face with very long stout hairs, longer and tuberculate at the base on the hind margin; front margin nearly straight, fringed with very long, slender, erect, wavy hairs; a row of spine-like hairs across the inner face as in the female, but more strongly developed. The first three segments of the tarsi are much stouter, flattened, and with the hairs from the under side longer than in the female.

This species differs from *lineatus* in the colour markings to be described below, and as follows: The declivity of *betulae* is distinctly hairy and the declivital interspaces are confusedly punctured; the declivital

interspaces of *lineatus* are uniseriately granulate-punctate, and the declivity indistinctly pilose. The lateral striæ of the elytra are impressed in *betulæ*; in *lineatus* only the last is distinctly impressed. The male of *betulæ* has a distinct carina in the depth of the frontal impression, and the hairs of the margin of the frontal impression and also of the anterior part of the pronotum are much longer than in *lineatus*. The male of *lineatus* has the carina usually faintly developed, and often represented by an anterior and posterior tubercle. The hind tibia of *betulæ* has a fringe of very long slender erect and wavy hairs on the front margin; this fringe is represented in *lineatus* by two or three of the long hairs.

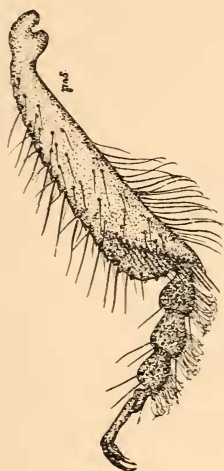


FIG. 14.—*T. betulæ*, n. sp., hind leg.

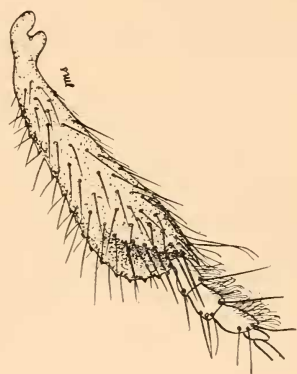


FIG. 15.—*T. lineatus* Oliv., hind leg.

The colour markings of *betulæ* seem to be quite distinct from those of *lineatus*. In *betulæ* the pronotum is dense black, and each elytron has the side and suture black, with a broad, dusky yellow band down the middle; usually the two black borders meet at the tip. There is considerable variation in the width of these black and yellow bands, but never a bright coloration nor an approach to the typical markings of *lineatus*. In *lineatus* the pronotum has the hind margin yellow or reddish. Each elytron has a black band along the side, the suture, and down the middle, with two yellow bands intervening, one between the lateral black border and the median black band, the other between the median black band and the black sutural border. The coloration is much brighter in *lineatus*.

In specimens from the Western Coast, which I have not separated from *lineatus*, the yellow caudal border of the pronotum extends forward to cover almost the entire disc, leaving the front angles black.

When specimens of either species are killed before completion of pigmentation, the bands are fainter, and the whole body may be yellowish.

With a large number of specimens before me, I find no difficulty in separating the two species from colour markings alone, and they are quite distinct in the other characters described.

I have taken the form which I consider *lineatus* or *bivittata* from conifers only, and *betule* only from deciduous trees.

Type specimens, ♂ and ♀, taken from *Betula lutea* at Ste. Anne de Bellevue, Quebec Province.

Phloxotribus piceæ, n. sp.—Length, 2-2¼ mm.; width, .8 mm. Colour brown to black; sparsely hairy; form more slender than *liminaris* or *frontalis*.

Head subglobose; front roughened by large, rather closely-placed punctures bearing slender yellowish hairs; above and on the sides minutely acupunctate; epistomal region concave, bounded above by a crescentic ridge; hairs from the concave area longer; antennæ arising from above the outer angle of the mandibles, as in *liminaris* and *frontalis*; antennal grooves short and deep; eyes entire and elongate.

Pronotum with lateral margins slightly rounded, distinctly narrowed cephalad; cephalic margin broadly rounded; caudal margin nearly straight, margined and deflexed; sparsely clothed with rather stout yellowish hairs arising from the sparsely placed, slightly tuberculate, very coarse punctures; scutellum minute.

Elytra rather elongate, sides subparallel, strongly narrowed behind; ventral margin of the declivity strongly serrate; base of elytra raised and margined with stout, recurved, crescentic tubercles; deeply punctate-striate; striæ with large, deep, closely placed punctures which bear very short inconspicuous hairs; interspaces strongly raised, carinate, with a row of setose tubercles which are larger behind, forming the serrations of the declivital interspaces, and become reduced to granulate punctures at the base; interspaces of the declivity strongly serrate. The ventral margin of the declivity is a serrate ridge formed by the union of the 9th and 10th interspaces, which fuse on the anterior third of the elytra. The serrations of this ridge are triangular and prominent. The ridge extends across the caudal face of the declivity below to fuse with the third interspace.

The antennal scape is slightly widened distally, and narrowed at the tip; the first segment of the funicle is very large, wider than long; the remaining four segments of the funicle are very short, the 4th and 5th wider; club 3-segmented, much longer than the funicle, long, suboval, distally pointed, narrower than in *frontalis*, with the lateral dilations of the segments less elongate.

Hind tibiæ stout, much widened distally; outer margin slightly curved, broadly rounded distally; inner margin also distinctly curved, with a slender mucro at the tip; outer margin with one submarginal spine, and the distal margin with six submarginal spines and marginal tubercles, clothed with long, slender, plumose hairs. The outer margin is not so strongly curved as in *Phlæotribus*, and not straight with a truncate distal margin as in *Phlæophthorus* (see Eichnoff).

Ste. Anne de Bellevue, P. Q., Canada. In dead but green branches of *Picea canadensis*. Two broods annually.

This species differs from *liminaris* and *frontalis* in its smaller size, more elongate form, elytral sculpture as given above, and characters of antennæ and tibiæ. I have not seen *P. puberulus* Lec., but judging from his description, which is quoted below, this species is smaller and differs in its more strongly elevated and very strongly serrated elytral interspaces.

"*Phlæotribus puberulus* Lec.—(Bul. U. S. Geol. and Geog. Survey of Territories, Vol. V., 1880.) Cylindrical, black, nearly opaque, clothed with fine, erect, yellowish pubescence; base of antennæ and tarsi piceous. Head sparsely, finely punctured; front nearly smooth, shining, broadly concave, with two small acute cusps on the epistoma. Prothorax wider than long, sides oblique, slightly rounded, coarsely punctured, dorsal line obsolete, visible only near the middle. Elytra with shallow striæ formed of quadrate punctures; interspaces somewhat elevated, not wider than the striæ, with the hair arranged in rows. Length, 2.5 mm.

"Veta Pass, one specimen. This species resembles in appearance *Hylesinus opaculus*, but is quite different in characters. The joints of antennæ are less prolonged than in the other species, so that the club becomes elongate oval, and as long as the remaining joints united"

I have described this species as belonging to *Phlæotribus*, but it might quite as well go in *Phlæophthorus*. Mr. Eichnoff characterized *Phlæophthorus* Woll. and *Phlæotribus* Lat. as follows:

"*Phlæophthorus* Woll.—Antenna with a 5-segmented funicle and a 3-segmented long, pointed club, with the segments feebly widened on the

inward side. Venter not turned upwards behind, horizontal. Middle and hind tibiæ straight on the outer side, and the tip truncate.

“*Phlæotribus* Lat.—Antenna with a 5-segmented funicle and a much longer fan-shaped club divided into three long leaf-shaped segments. Venter arched, notably upturned behind. Middle and hind tibiæ rounded on the outer margin and toothed.”

In *Phlæotribus caucasicus* and in *Ph. scarabæoides* the hind tibiæ are distinctly rounded and toothed on the outer margin. In *Phlæophthorus rhododactylus* the tibiæ are straight on the outer margin and abruptly truncate distally, with one tooth on the outer margin and a series of teeth distally. In *Phlæotribus frontalis* and *Phlæotribus liminaris* the outer margin of the hind tibiæ is strongly rounded and toothed, somewhat as in *caucasicus* and *scarabæoides*. In *P. piceæ*, n. sp., the hind tibiæ are slightly rounded on the outer margin, and broadly rounded on the distal margin, with one tooth on the former and a series of six on the latter. In *P. scarabæoides* the lateral extension of the segments of the club are very elongate; in *caucasicus* distinctly shorter; in *liminaris* still shorter; in *frontalis* shorter than in *liminaris*, and in *piceæ* and *puberulus* shorter than in *frontalis*. In *P. rhododactylus* these lateral extensions are barely noticeable. In these forms there is a distinct gradation in this character, and the difference between the conditions in the clubs of *scarabæoides* and *piceæ* is quite as decided as that between the latter and *rhododactylus*. In *caucasicus* and *scarabæoides* the antennæ are close together on the front above the inner angles of the mandibles. In *rhododactylus*, *liminaris*, *frontalis* and *piceæ* the antennæ are further apart, arising above the outer angles of the mandibles. In my specimens of *caucasicus* and *scarabæoides* the venter is distinctly bisinuate in profile, with the thorax convex, bending upward to the abdomen. In *rhododactylus* the venter sometimes exhibits this curve in lesser degree, but is usually nearly horizontal. In *liminaris* and *frontalis* the ventral curve is very feeble but variable, and in *piceæ* is scarcely to be detected.

This intergradation of character leads me to believe that *Phlæophthorus* Woll. is hardly more than a subgenus of *Phlæotribus* Lat.

The relations of *piceæ* to *liminaris*, *frontalis* and *puberulus* are indicated in the following key :

- A. Club with the lateral extensions of the segments more than twice as long as their width at the base.

- Hind tibiæ rounded and toothed on the outer side; pronotum not coarsely punctured and not tuberculate; elytral interspaces nearly flat and roughly punctured *liminaris* Harris.
- AA. Club with the lateral extensions of the segments not more than twice as long as wide.
- B. Club with the lateral extensions of the segments about twice as long as wide.
- Prothorax granulate-punctate, elytral interspaces elevated and serrate, more strongly behind *frontalis* Zimm.
- BB. Club with the lateral extensions of the segments about as long as wide.
- C. Elytral interspaces somewhat elevated (see description) *puberulus* Lec.
- CC. Elytral interspaces strongly elevated and serrate with granules, which become large and prominent on the declivity. . . *piceæ*, n. sp.
- Type and paratypes of new species described above are in the collection of Macdonald College.

EXPLANATION OF PLATE II.:

(All are much enlarged, and drawn with a camera lucida.)

- FIGS. 1. *Phlæophthorus rhododactylus* Marsh, antennal club and outer part of funicle.
- “ 2. *Phlæotribus piceæ*, n. sp., antenna.
- “ 3. *Phlæotribus frontalis*, Oliv., antenna.
- “ 4. *Phlæotribus liminaris* Harris, antennal club and funicle.
- “ 5. *Phlæotribus caucasicus* Reitt., antennal club and funicle.
- “ 6. *Phlæotribus scarabæoides* Bernard, antenna.
- “ 7. *Phlæophthorus rhododactylus* Marsh, hind tibia.
- “ 8. *P. piceæ*, n. sp., hind leg.
- “ 9. *P. frontalis* Oliv., hind tibia.
- “ 10. *P. liminaris* Harris, hind tibia.
- “ 11. *P. caucasicus* Reitt., hind tibia.
- “ 12. *P. scarabæoides* Bernard, hind leg.

A CORRECTION.—In “Notes on a Few Scolytidæ,” in the May, 1910, number of the CANADIAN ENTOMOLOGIST, page 165, under “DD,” the following error occurs: “Punctures of the elytral striæ more closely placed,” should read, “punctures of the elytral striæ more *widely* placed.”

J. M. S.

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PLATE II.

